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(54) PLATEN AND INK-JET RECORDING APPARATUS COMPRISING THE  
PLATEN

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a platen comprising a structure for quickly discharging an ink abandoned on an ink receiving surface of the platen in an ink-jet

recording apparatus.

SOLUTION: A platen 1 for determining the position of the material to be recorded with respect to the recording head by supporting the material to be recorded from below at the time of recording on a material to be recorded with a recording head 21 having a plurality of nozzle rows for ejecting an ink toward to the material to be recorded, wherein a through hole 6 provided through the front and rear sides of the platen for discharging to the rear side downward direction an ink abandoned beyond the end part of the material to be recorded is provided as well as one or a plurality of ink guiding paths (groove 7, V groove 9) are provided for collecting the abandoned ink to the through hole 6 and promoting the discharge thereof, is provided.

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#### CLAIMS

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[Claim(s)]

[Claim 1] In case it records on a recorded material by the recording head which has two or more nozzle trains which carry out the regurgitation of the ink toward a recorded

material It is the platen which specifies the location of the recorded material to said recording head by supporting a recorded material from the bottom. In order to discharge the ink left across the edge of a recorded material in a background lower part from the ink receptacle side of a platen, while having the through tube which penetrates the front flesh side of a platen The platen characterized by preparing one thru/or two or more ink TWYs for bringing said left ink together in said through tube, and urging the discharge to it.

[Claim 2] It is the platen characterized by being the slot prepared so that an ink TWY might be open for free passage to the ink receptacle side of said platen in claim 1 at said through tube.

[Claim 3] The platen to which the corner of the part with which said slot is connected in a through tube is characterized by carrying out rounding-off processing in claim 2.

[Claim 4] It is the platen characterized by being the V groove formed so that it might extend caudad from the ink receptacle side of a platen in the height prepared so that an ink TWY might project to a platen rear face at said through tube edge in claim 1.

[Claim 5] It is the platen 1 characterized by for said through tube being a polygonal through tube, and preparing said V groove in the corner of the through tube of said polygon in claim 4.

[Claim 6] The platen characterized by preparing the slot for making said TWY concentrate ink on the perimeter of said through tube on the rear face of a platen in claims 4 or 5.

[Claim 7] It is the platen which said through tube is enclosed at the platen rear face, and a tube-like object protrudes in claim 1, and is characterized by being constituted so that it may intercept that said ink which flows down the ink TWY where this tube-like object was prepared in the inside overcomes the lower limit of the tube-like object concerned, and turns to the platen rear face of the outside of this tube-like object.

[Claim 8] It is the platen to which a wire extension [ in / on claim 7 and / in said tube-like object / a platen rear face ] is characterized by being mostly in agreement with the die length to this direction of a wall where a platen body is constituted.

[Claim 9] It is the platen which a rib is really prepared in a platen rear face by shaping in claims 7 or 8, and is characterized by forming the wire extension of the tube-like object concerned more than the die length to this direction of said rib.

[Claim 10] It is the platen which said through tube is prepared in claim 1 so that the lower part may project to a platen rear face, and is characterized by for said ink TWY inclining caudad and forming the edge formed of the lower limit of this internal surface by forming the internal surface which forms said through tube so that it may extend caudad from the ink receptacle side of a platen.

[Claim 11] The platen characterized by preparing the ink TWY which has structure according to claim 4 or 10 further as an ink TWY in claims 2 or 3.

[Claim 12] The platen characterized by forming the ink absorber in said ink receptacle

side in any 1 term of claims 1-11.

[Claim 13] The ink jet recording device which equipped any 1 term of claims 1-12 with the platen of a publication.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the platen which functions as a location convention member of a recorded material in an ink jet type recording device. Moreover, this invention relates to the ink jet type recording device equipped with this platen.

[0002]

[Description of the Prior Art] A platen is a member which specifies the location of the recorded material to a recording head by supporting a recorded material from the bottom in an ink jet type recording device. This platen has two or more ribs arranged by the main scanning direction at fixed spacing in the field which counters a recording head, and record to a recorded material is performed by breathing out ink from two or more nozzle trains of a recording head, after the recorded material has supported to the flat top face of this rib at the time of record.

[0003] By the way, in performing the so-called margin-less printing which prints by making an vertical and horizontal margin into zero with an ink jet recording apparatus, it sets up in many cases so that excessive ink may be left across the edge of a recorded material. In this margin-less printing, there is a possibility that it may be left by the platen side and adhering ink may soil a recorded material, and in order to prevent this, a means to prevent dirt of a recorded material has been provided by establishing the crevice for receiving the left ink in the ink receptacle side (it using in this invention as a generic name of the platen side which counters a recording head) of a platen.

[0004] However, in margin-less printing, even if it prepares a crevice when the frequency of margin-less printing is high since there are many amounts of the ink left, the amount of the ink which remains at the bottom of a crevice increases, and if this is left, it will lead to diffusion of ink contamination of the circumference of a platen at the dirt pan of a recorded material. Therefore, it is desirable to discharge the ink which remained from the ink receptacle side of a platen as promptly as possible. Especially, in the ink jet recording device, the ink of permeability is used from viewpoints, such as drying-time compaction of the improvement in image quality (record quality) and the breathed-out ink. Since the ink of this permeability enters a narrow corner and a narrow depression rapidly, it may overcome a wall depending on the case and ink contamination of the circumference of a platen may diffuse it.

[0005]

[Problem(s) to be Solved by the Invention] The technical problem of this invention is offering the ink jet recording device equipped with a platen and this platen equipped with the structure which discharges promptly the ink left by the ink receptacle side of a platen in an ink jet type recording device.

[0006]

[Means for Solving the Problem] In case invention according to claim 1 is recorded on a recorded material by the recording head which has two or more nozzle trains which carry out the regurgitation of the ink toward a recorded material It is the platen which specifies the location of the recorded material to said recording head by supporting a recorded material from the bottom. In order to discharge the ink left across the edge of a recorded material in a background lower part from the ink receptacle side of a platen, while having the through tube which penetrates the front flesh side of a platen It is the platen characterized by preparing one thru/or two or more ink TWYs for bringing said left ink together in said through tube, and urging the discharge to it.

[0007] Since one thru/or two or more ink TWYs for urging discharge of ink was prepared while preparing the through tube for discharging the ink left by the ink receptacle side of a platen according to this invention, the ink left by the ink receptacle side of a platen can be discharged promptly, and diffusion of ink contamination of the circumference of a platen can be prevented to the dirt pan of the recorded material by the left ink adhering to a recorded material by this. That is, the ink TWY of this invention has the operation guided to a through tube lower part quickly and certainly with the operation to which the ink left by the ink receptacle side of a platen is centralized, and discharge is urged.

[0008] A platen according to claim 2 is characterized by an ink TWY being the slot established in the ink receptacle side of said platen so that it might be open for free passage to said through tube in claim 1. Since according to this description the slot was prepared so that it might be open for free passage to a through tube as an ink TWY, the ink which remained in all the corners of an ink receptacle side can be guided and centralized on a through tube.

[0009] A platen according to claim 3 is characterized by carrying out rounding-off processing of the corner of the part with which said slot is connected in a through tube in claim 2. Since the corner of the part with which a slot is connected in a through tube was rounded off and processed according to this description, the ink led by the slot even near the through tube becomes easy to advance into a through tube, and discharge of ink is promoted. That is, it is promptly guided to a through tube, without ink piling up in a corner by rounding off and processing a corner.

[0010] A platen according to claim 4 is characterized by an ink TWY being the V groove formed so that it might extend caudad from the ink receptacle side of a platen in the height prepared so that it might project to a platen rear face at said through tube

edge in claim 1. Since discharge of the ink from the ink receptacle side of a platen is not only performed promptly, but according to this description it wrote as the V groove which formed said ink TWY so that it might be caudad extended across a platen rear face from the ink receptacle side of a platen and the ink TWY has advanced to a platen lower part, the collected ink can be led to a lower part quickly and certainly.

[0011] In claim 4, said through tube of a platen according to claim 5 is a polygonal through tube, and said V groove is characterized by being prepared in the corner of the through tube of said polygon. While having the same effectiveness as claim 4 by having prepared the V groove of an ink TWY in the corner of a polygonal through tube according to this description, the corner of a through tube can be used as a TWY.

[0012] A platen according to claim 6 is characterized by preparing the slot for making said TWY concentrate ink on the perimeter of said through tube on the rear face of a platen in claims 4 or 5. Since it is led to the V groove prepared in the height after uptake was carried out by the ink fang furrow which flowed and went down the through tube to it since the slot for centralizing ink was established in the perimeter of said through tube on the rear face of a platen and concentration of ink had progressed further according to this description, discharge of the ink which leads an ink TWY is performed still more efficiently.

[0013] A platen according to claim 7 encloses said through tube at the platen rear face in claim 1, a tube-like object protrudes, and it is characterized by constituting this tube-like object so that said ink which flows down the ink TWY established in the inside may intercept overcoming the lower limit of the tube-like object concerned, and turning to the platen rear face of the outside of this tube-like object.

[0014] As the ability to, prevent dirt of the recorded material in the left ink of course according to this description, the tube-like object concerned Since it is constituted so that it may intercept enclosing said through tube, and the ink which flows down said ink TWY established in the inside overcoming the lower limit of the tube-like object concerned, and turning to the platen rear face of the outside of this tube-like object By the permeability of the left ink, the problem which ink contamination diffuses in the circumference of a platen can be prevented certainly.

[0015] Moreover, if a rib and other components were conventionally formed in the rear face of a platen for a certain technical purpose, since the narrow corner and narrow depression of the part would increase, the ink of permeability would become easy to enter there and it would become easy to expand ink contamination, it was presupposed that it was hard to prepare said rib etc. in a platen rear face, and there was constraint on a design. However, since it can intercept that ink turns to the outside of this tube-like object with the tube-like object concerned according to this invention, if it is the outside of the tube-like object concerned, said rib etc. can be prepared in a platen rear face in comfort, and the degree of freedom of a design will improve.

[0016] It is characterized by the platen of said tube-like object according to claim 8

corresponding with the die length to this direction of a wall where the wire extension in a platen rear face constitutes a platen body mostly in claim 7. Here, it means that the wire extension of a tube-like object "mostly in agreement" can set up from a somewhat short condition to a long condition to a wall, and means that there is no need for a strict dimension convention.

[0017] According to this description, since it is constituted with usually sufficient die length, said wall which constitutes a platen body can simplify that concrete design and manufacture by determining the die length of a tube-like object on the basis of the die length of this wall. Here, in discovering said surroundings lump cutoff function in which a tube-like object receives ink as the wall has "sufficient die length", it means that it is more than the die length that can secure a required protrusion dimension.

[0018] In claims 7 or 8, as for a platen according to claim 9, a rib is really prepared in a platen rear face by shaping, and the wire extension of the tube-like object concerned is characterized by being formed more than the die length to this direction of said rib.

[0019] In order that the opposite section with said recording head of a platen may fulfill each design condition, such as a convention of spacing (the so-called paper gap) with a recording head, and correspondence to a cock ring, high degree of accuracy is required of the precision on a design and manufacture. Although a platen is generally really manufactured by shaping by injection molding, the gravimetric analysis in the whole platen configuration where a location and height, a hole site for ink \*\*\*\*\*, the depth, etc. of the projection for recorded material location regulation (called a "diamond rib") formed in an opposed face side with a recording head are an injection-molded product may be distorted at the time of the cooling, and may be unable to maintain the meant high degree of accuracy.

[0020] According to this invention, by the rib really being prepared in the platen rear face by shaping, it is possible to make the gravimetric analysis in the whole platen configuration balance, it can have and the platen as mold goods can really [ highly precise ] be obtained. On the other hand, if such a rib is prepared in a platen rear face, the narrow corner and narrow depression of the part will increase, the ink of permeability will become easy to enter there, and it will become easy to expand ink contamination, but since it can intercept that overcome the lower limit of this tube-like object, and ink turns to the outside with the tube-like object concerned, even if said rib is prepared, expansion of ink contamination can be prevented certainly.

[0021] In claim 1, invention according to claim 10 is prepared so that said through tube lower part may project to a platen rear face, and said ink TWY is characterized by inclining caudad and forming the edge formed of the lower limit of this internal surface by forming the internal surface which forms said through tube so that it may extend caudad from the ink receptacle side of a platen.

[0022] Since according to this description the lower part inclined caudad the edge formed of the internal-surface lower limit of the through tube which projects to a platen

rear face and formed the ink TWY, the ink which flowed down through the wall of a through tube centralizes further by the ink TWY which inclined caudad, and it is urged to discharge by this.

[0023] Invention according to claim 11 is characterized by preparing the ink TWY which has structure according to claim 4 or 10 further as an ink TWY in claims 2 or 3. While according to this description centralizing the ink which remained in all the corners of an ink receptacle side by the slot prepared so that it might be open for free passage to a through tube as an ink TWY and guiding to a through tube, ink can be centralized further, and it can lead caudad certainly, and is further urged to discharge of ink by the ink TWY which advanced to the platen lower part.

[0024] A platen according to claim 12 is characterized by forming the ink absorber in said ink receptacle side in any 1 term of claims 1-11. According to this description, it can control that soften an impact in case ink is left further in addition to the ink discharge effectiveness by the ink TWY, and fog-like ink Myst occurs by having formed the ink absorber in the ink receptacle side.

[0025] An ink jet recording device according to claim 13 is characterized by equipping any 1 term of claims 1-12 with the platen of a publication. According to this description, it becomes possible to obtain an ink jet recording device with the same operation effectiveness as one invention of above-mentioned claims 1-12.

[0026]

[Embodiment of the Invention] Hereafter, based on a drawing, the gestalt of operation of the invention in this application is explained. First, drawing 1 is the important section sectional view showing the Records Department in the ink jet type recording device equipped with one embodiment of this invention platen 1, and this platen 1. Moreover, for drawing 2, the top view of said platen 1 and drawing 3 are [ the important section rear-face Fig. of said platen and drawing 5 of this important section perspective view and drawing 4 ] the important section perspective views of the rear face of said platen.

[0027] In drawing 1, a sign 21 shows the recording head section. the carriage lower part which the recording head section 21 does not illustrate -- a main scanning direction -- a round trip -- it is prepared movable and the nozzle array 22 which carries out the regurgitation of the ink is formed in the ink receptacle side of a platen 1, and the location which counters.

[0028] It is fed with a recorded material P by the feed equipment which the conveyance direction upstream does not illustrate, and it is sent on the platen 1 which counters the recording head section 21 by rotation of these paper feed rollers 31 and 32, being compressed with the paper feed rollers 31 and 32.

[0029] The rib 2 (the 1st rib) and rib 3 (the 2nd rib) which specify the distance (paper gap) of the recording surface of a recorded material P and the nozzle array 22 are prepared in the platen 1, the recorded material P conveyed on the platen 1 receives the regurgitation of ink from the nozzle array 22, after having been maintained at the fixed



paper gap by these ribs 2 and 3, and record is performed.

[0030] As shown in drawing 2, a flat-surface configuration is the abbreviation rectangle prolonged in a main scanning direction, a platen 1 is arranged so that it may correspond to a platen 1 towards a rib 2 and a rib 3 going down-stream from the conveyance direction upstream, respectively, and at fixed spacing, a rib 2 and a rib 3 make a train to a main scanning direction, and are arranged in it. Here, all the ribs 2 are formed so that it may project from platen 1 body a little to the conveyance direction upstream.

[0031] Except for rib 2 part and rib 3 part, it crosses to the ink receptacle side of a platen 1 throughout the abbreviation for an ink receptacle side, and the crevice 4 is formed in it in the predetermined depth. Thereby, a rib 3 stands in a row every 1-3 pieces, and forms two or more pars insularis 5. This crevice 4 is a hollow for leaving ink, when performing margin-less printing to a recorded material P, and the ink breathed out across the edge of front and rear, right and left of a recorded material P will be first left by this crevice 4.

[0032] the bottom of a crevice 4 -- the array and this direction of the pars insularis 5 -- the pars insularis 5 and abbreviation -- by the same width of face (width of face to the direction of vertical scanning), it is prepared so that through tubes 6a-6e may adjoin the pars insularis 5 (here, through tube 6e omits illustration). As for this through tube 6, it is desirable to arrange according to the class of recorded material P in the location on the platen 1 corresponding to the circumference of an edge of right and left of a recorded material P. Moreover, the magnitude and the configuration of each through tube can also be set up according to the structure of a platen 1, the magnitude of the ink jet type recording device which uses this platen 1, the class of recorded material which is planning printing, etc.

[0033] Here, the ink TWY which is a characteristic configuration is explained in this invention platen 1. Drawing 16 shows the structure of an ink TWY typically from drawing 6. Drawing 6 is the important section top view showing the mode which formed two or more V grooves 9a-9c, respectively as an ink TWY in the height 8 caudad prolonged at the edge of a through tube 6 in a slot 7 (it is hereafter described as "the induction slot 7") in the ink receptacle side of a platen 1, and is writing together structure on the back with the broken line. It is the drawing which a sectional view [ in / in drawing 7 / X-X-ray of drawing 6 ] and drawing 8 show this perspective view to, and drawing 9 shows the condition of the rear face of drawing 6.

[0034] In drawing 6, the induction slot 7 which is an ink TWY is formed so that it may be open for free passage to V groove 9a which is other ink TWYs in which the flat-surface configuration was formed using one of the corners of the rectangular through tube 6. The flat-surface configuration of a through tube 6 can be made into the configuration of arbitration with many angles of a star type besides [ not only ] a rectangle but polygons, such as for example, a forward square, a parallelogram, a triangle, and a pentagon, etc.

[0035] The edge (other end) where the through tube 6 of the induction slot 7 is opposite is attained to the predetermined location of the ink receptacle side of a platen 1, and it has the operation which leads the ink left from there to a through tube 6. As a location which forms the other end of this induction slot 7, the ink receptacle side of the platen 1 corresponding to the circumference of an edge of the recorded material P which the regurgitation of the ink from the nozzle array 22 of a recording head 21 concentrates, for example, the base corner (hit at which this base crosses a wall surface) of the ink receptacle side crevice 4 which ink \*\*\*\*\* tends to produce, etc. are desirable.

[0036] In this mode, although the induction slot 7 is formed in the cross-section abbreviation V typeface, it can also be made other configurations, such as a cross-section U typeface, for example.

[0037] As Notation R shows to [drawing 6](#) and [drawing 8](#), as for the corner of the part with which the induction slot 7 is connected in a through tube 6, it is desirable to round off and process it, and it becomes easy to flow to a through tube 6 down the ink to which the induction slot 7 has been led by this. That is, the ink to which the induction slot 7 has been led is promptly led to a through tube 6 by rounding off and processing the corner of the part with which the induction slot 7 is connected in a through tube 6, without piling up in the location concerned. Moreover, in order to acquire the same effectiveness, what (that is, it bevels so that a corner may serve as an inclined plane) the wall of the perimeter of a corner concerned is low formed for is more desirable so that the depth of the induction slot 7 of the corner concerned may become shallow relatively compared with the other end of the induction slot 7.

[0038] As described above, in addition to the induction slot 7 as an ink TWY, in the mode of [drawing 9](#), the main V groove 9a list formed so that it might extend caudad in the height 8 of through tube 6 corner which projected to platen 1 rear face and was prepared in it as another ink TWY is equipped with subV grooves 9b and 9c from [drawing 6](#). Thus, when V grooves 9a-9c are prolonged below with the height 8, the ink which flows down V grooves 9a-9c can be led caudad certainly. Here, although main V groove 9a is formed using one corner of the rectangular through tube 6, the location of through tube 6 edge which forms V groove 9a is not limited to this, and can be established in the location of the arbitration of through tube 6 edge. It can form in the include angle of arbitration in the range which can urge concentration and induction of not only 90 degrees but ink also to the include angle of V groove 9a. The configuration of the appearance of a height 8 is not restricted in the shape of [ as shown in [drawing 9](#) from [drawing 6](#) ] a reverse cone, and can be chosen from a configuration as arbitration, such as a cylinder, the square pole, and a reverse triangular pyramid. Furthermore, the die length of the height 8 and V groove 9 which march out caudad can be suitably set up according to the magnitude and structure of an ink jet recording device which use a platen 1 and this platen 1.

[0039] In addition, it cannot be overemphasized that it is possible to prepare the

induction slot 7, and two or more heights 8 and V grooves 9 in one through tube 6 in this invention, respectively.

[0040] In this mode, as shown in drawing 9 , further, it is open for free passage to through tube 6 perimeter of platen 1 rear face with said through tube 6, and the slot (it is hereafter described as "the concentration slot 10") for centralizing ink further is established in it. This concentration slot 10 has the operation which avoids the phenomenon around which it turns to the rear face of a platen 1, without the ink which arrived at platen 1 rear face falling below while having the function brought together in the height 8 equipped with V groove 9 which is an ink TWY about the ink which flowed down the through tube 6 from the ink receptacle side of a platen 1, and arrived at platen 1 rear face. That is, as a small arrow head shows drawing 9 , after being able to draw the circumference of a rear face of a through tube 6 by the concentration slot 10 and being brought together in the wall surface of a height 8, the ink which flowed down the through tube 6 (mainly corner), and arrived at platen 1 rear face is transmitted to this reverse conic wall surface periphery, and is led to V groove 9 of an ink TWY. Here, subV grooves 9b and 9c are formed in the periphery wall surface of a height 8 so that the ink from the concentration slot 10 formed in the perimeter of a background of a through tube 6 can be guided as it is. The discharge to the lower part of the ink collected by the concentration slot 10 is further promoted by these subV grooves 9b and 9c.

[0041] In this mode, although it is formed in the perimeter at the cross-section abbreviation inverted-U character form so that a through tube 6 may be surrounded, if it is the structure which can centralize ink, it is, for example in other configurations, such as a cross-section reverse V typeface, and the concentration slot 10 on on the back is \*\*.

[0042] Moreover, as Notation R shows to drawing 9 , as for the corner of the wall 11 of the rectangle formed between the concentration slot 10 and a through tube 6 at island shape, and the corner of the inner circumference of the concentration slot 10, it is desirable to round off and process it, and thereby, they can prevent stagnation of the ink in each corner.

[0043] Drawing 10 to drawing 12 is the mimetic diagram showing another mode of V groove 9 as an ink TWY, and drawing 10 is [ this important section sectional view and drawing 12 of the important section top view of the perimeter of a through tube and drawing 11 ] these important section perspective views. In this mode, the height 8 is formed so that one side of the edge of the through tube 6 of a flat-surface arbitration configuration instead of the corner of a through tube 6 may be faced. Therefore, in this case, the flat-surface configuration of a through tube 6 does not need to be a configuration which has a corner, and can also be made into circular, an ellipse form, etc. Here, as shown in drawing 10 and drawing 12 , the corner R of the through tube 6 of an arbitration configuration rounds off, and is processed so that it may be easy to concentrate ink on V groove 9 of the acute angle formed in the height 8 and it may become it.

[0044] moreover, the voice which showed V groove 9 formed in the height 8 to drawing 9 from said drawing 6 -- as the base does not hang from the ink receptacle side of a platen 1 so that like, but a broken line shows to drawing 12, it becomes the lower part of a height 8 -- the base is aslant formed at an angle of arbitration so that it is alike, and it may follow and the depth of V groove 9 may become shallow. If it does in this way, the ink which flows down two wall surfaces which form V groove 9 will assembly-come to be easy to the base part of V groove 9, and an ink intensive operation will be reinforced.

[0045] Drawing 13 to drawing 16 is the mimetic diagram showing still more nearly another mode of the ink TWY established in this invention platen 1, and a sectional view [ in / drawing 13 , and / in drawing 14 / the Y-Y line of drawing 13 ], a sectional view [ in / in drawing 15 / this Z-Z line ], and drawing 16 are the important section perspective views in the condition of having looked up at the platen 1 from the rear face. [ the important section top view of the perimeter of a through tube ] Signs alpha, beta, gamma, and delta show the lower limit corner of the through tube 6 of a flat-surface rectangle among drawing 16 from drawing 13, respectively.

[0046] In this mode, a through tube 6 is taken as the ink TWY to which ink is led caudad by making the edge which is prepared so that the lower part may project at the platen 1 rear face, forms the internal surface which forms said through tube 6 so that it may extend caudad from the ink receptacle side of a platen 1, and is formed of the lower limit of this internal surface incline. alpha is located in a degree in the highest location, as for the lower limit corner of a through tube 6, beta and gamma are located in the same height, and delta is set up so that it may become the lowest location, and each inclination side 12 which makes between alpha-beta, between alpha-gamma, between gamma-delta, and between beta-delta forms the ink TWY, respectively. That is, the ink which flowed down the through tube 6 and arrived at the lower limit can draw the ink TWY which consists of each inclination side 12, the time amount which grows up to be even the magnitude in which an ink droplet carries out free fall as a result of concentrating on the lower limit corner delta in the further lowest location is shortened, and the discharge to a lower part is promoted.

[0047] In this mode, although the height of the lower limit corners beta and gamma of a through tube 6 was similarly set up, the lower limit corners alpha, beta, gamma, and delta may set it up so that it may become height different, respectively. Moreover, not only a rectangle but the thing to consider as other polygons and the configurations (circular, ellipse form, etc.) which do not have a corner is possible for the flat-surface configuration of a through tube 6. Furthermore, it is also possible to set up an outer wall for a long time caudad so that the side to which a wall is made to project or the lower limit of the outer wall of a through tube 6 is conversely connected so that it may become a location lower than the side to which the lower limit corner of the outer wall of a through tube 6 which corresponds the side to which the lower limit corners alpha, beta,

gamma, and delta of the wall of a through tube 6 are connected, respectively is connected may become a location lower than the side to which the lower limit of a wall is connected.

[0048] In addition, the principle of the ink TWY by the inclination side 12 shown in drawing 16 from drawing 13 can be attained also by preparing so that the base (base) of the wall 11 in the mode of drawing 9 may be inclined below from drawing 6.

[0049] It is based on the above explanation and returns from drawing 1 to explanation of drawing 5. As shown in drawing 2, two or more formation of the induction slot 7 as an ink TWY is carried out at the bottom of the crevice 4 of this invention platen 1. First, the main induction slot 7 was formed directly under the conveyance direction downstream wall surface of the pars insularis 5 formed with a rib 3 so that the both ends of a crevice 4 might be connected to a main scanning direction, and five induction slots 7 have extended towards through tubes 6a-6e, respectively from directly under [ of a crevice / conveyance direction downstream wall surface ] so that it may flow at an angle of arbitration into this main induction slot 7. Moreover, from directly under [ of the conveyance direction upstream of a crevice 4 / wall surface ], to the conveyance direction upstream corner of through tubes 6a-6e, five induction slots 7 have extended so that it may flow at an angle of arbitration, respectively.

[0050] moreover, the main induction slot 7 is in contact with the conveyance direction downstream edge of through tubes 6a-6e in the state of disconnection (namely, a form which forms a step so that ink can flow down to a through tube 6 even from where of the conveyance direction downstream edge of the through tubes 6a-6e concerned – the main induction slot 7 – being open for free passage), and has the structure where ink is easy to be led to a through tube 6.

[0051] The structure of through tube 6 perimeter is expanded and it is shown in drawing 3 (perspective view). Moreover, drawing 4 and drawing 5 are drawings in which the condition of the rear face of the through tube 6 circumference is shown. In the edge of the corner of the conveyance direction upstream of a through tube 6, the height 8 is formed in the rear face. Here, the height 8 prepared between two through tubes 6 is shared by two through tubes 6 of both sides, and two V grooves caudad prolonged from an ink receptacle side are formed using the corner of said two through tubes 6.

[0052] Moreover, the concentration slot 10 is formed in the perimeter of a rear face of a through tube 6 so that a through tube 6 may be surrounded, it is inserted into the wall 11 on either side between two through tubes in it, and the concentration slot 10 made and formed is shared by two through tubes 6 of both sides.

[0053] the through tube 6 (they are specifically the through tubes 6b and 6c of drawing 2) which adjoins here -- an example -- taking -- this operative condition -- although the structure of the ink TWY in the platen [ like ] 1 was explained, other through tubes have the circumference structure which applied correspondingly. Since the operation and structure of the induction slot 7, a height 8, V groove 9, and the concentration slot 10 in

this embodiment can refer to the contents explained according to drawing 9 from said drawing 6 , they give the same sign to the same part, and omit explanation. Moreover, in this invention platen, it can replace with the height 8 and V groove 9 in drawing 5 from drawing 1 , and the ink TWY of the mode illustrated from above-mentioned drawing 10 to drawing 16 can be prepared. Moreover, it is also possible to prepare combining the ink induction structure and ink chassis and body integral construction which were shown in drawing 16 if needed into one platen from drawing 6 .

[0054] The important section sectional view showing another mode of the ink TWY where drawing 17 was prepared in this invention platen, and drawing 18 are the important section perspective views on the platen background seen from [ of drawing 17 ] arrow-head A. The platen 1 of this mode encloses said through tube 6 at the platen rear face 40, has an inside flat-tapped with the inside of this through tube 6, and a tube-like object 41 goes caudad and it protrudes. A tube-like object 41 consists of the tube-like object of four square shapes, and four corners 42a, 42b, 42c, and 42d of the inside turn into four corners of said through tube 6 to a single string, respectively, and it constitutes V groove 9 as an ink TWY. The tube-like object 41 is constituted so that it may intercept that the ink which flows down said V groove 9 overcomes the lower limits 43 and 44 of the tube-like object 41 concerned, and turns to the platen rear face 40 of the outside of this tube-like object 41. The lower limit 43 of one side has projected the tube-like object 41 for a while from other lower limits 44 of three sides.

[0055] Surroundings [ this ] lump cutoff structure is specifically constituted as follows. Said tube-like object 41 is formed somewhat longer than the die length to this direction of walls 45 and 46 where the wire extension in the platen rear face 40 constitutes a platen body. In addition, extent which is mostly in agreement with said walls 45 and 46 may be a standard, and the wire extension of a tube-like object 41 may completely have it also by the same die length. [ somewhat short ] Since said walls 45 and 46 which constitute a platen body are constituted with usually sufficient die length, the effectiveness that that concrete design and manufacture can be simplified by determining the die length of a tube-like object 41 on the basis of the die length of these walls 45 and 46 is acquired. Here, in discovering said surroundings lump cutoff function in which a tube-like object 41 receives ink as walls 45 and 46 have "sufficient die length", it means that it is more than the die length that can secure a required protrusion dimension.

[0056] Furthermore, ribs 47, 48, 49, and 50 are really formed in the platen rear face 40 by shaping, and the wire extension of the tube-like object 41 concerned is formed more than the die length to this direction of said ribs 47, 48, 49, and 50. Ink has prevented permeating rib [ of the outside ] 47, 48, and 49, and 50 side from the inside of a tube-like object 41 by the tube-like object 41 concerned projecting more than the die length to this direction of said ribs 47, 48, 49, and 50, and forming it.

[0057] In order that the opposite section with said recording head 21 of a platen 1 may

fulfill each design condition, such as a convention of spacing (the so-called paper gap) with a recording head 1, and correspondence to a cock ring, high degree of accuracy is required of the precision on a design and manufacture. Although a platen 1 is generally really manufactured by shaping by injection molding The locations and height of said 1st rib 2 which is the projection for recorded material location regulation formed in an opposed face side with a recording head 1, and the 2nd rib 3, The gravimetric analysis in the whole platen configuration where a location, the depth, etc. of said crevice 4 which are a hole for ink \*\*\*\*\* are an injection-molded product may be distorted at the time of the cooling, and may be unable to maintain the meant high degree of accuracy.

[0058] According to the mode concerning this invention, by ribs 47, 48, 49, and 50 really being formed in the platen rear face 40 by shaping, it can be possible to make the gravimetric analysis in the whole platen configuration balance, the distortion at the time of cooling can be prevented by this, it can have, and the platen 1 as mold goods can really [ highly precise ] be obtained now. Although depressions increase in number, the ink of permeability becomes easy to enter there and it becomes easy to expand ink contamination, since only the part can intercept the narrow corners 51 and 51, ..., that ink turns to the outside of this tube-like object 41 with the tube-like object 41 concerned by on the other hand forming such ribs 47, 48, 49, and 50 in the platen rear face 40, expansion of ink contamination can be prevented certainly.

[0059] It is desirable to form the ink absorber for absorbing the ink left from the nozzle array 22 in an ink receptacle side at the platen 1 of this invention. Since an impact in case ink is breathed out by the ink receptacle side from the nozzle array 22 by forming an ink absorber is eased and the so-called generating of ink Myst can be prevented, dirt prevention of a recorded material becomes the discharge effectiveness of the ink by the ink TWY, and a much more positive thing conjointly. Although a configuration well-known as an ink absorber is employable, the ink absorber which consists of an elastic absorber (for example, foaming elastic bodies, such as sponge material) in which a compression set is possible is desirable. The ink absorber of one apparatus with which slits, such as slitting, were prepared so that the crevice 4 interior of the ink receptacle side of a platen 1 can be loaded and this pars insularis 5 might be especially avoided into the part corresponding to the pars insularis 5 is more desirable.

[0060]

[Effect of the Invention] While preparing the through tube for discharging the ink left by the ink receptacle side of this platen in the platen of an ink jet type recording device according to this invention, the ink which exists in the ink receptacle side of a platen can be promptly discharged by having prepared one thru/or two or more ink TWYs for urging discharge of ink to this through tube part. Therefore, the ink left by the platen in margin-less printing can prevent diffusion of ink contamination of the circumference of a platen to the dirt pan of the recorded material by adhering to a recorded material.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the important section sectional view of the platen concerning the gestalt of 1 operation of this invention, and the recording head section.

[Drawing 2] It is the top view of the platen of drawing 1 .

[Drawing 3] It is the important section perspective view of the platen of drawing 1 .

[Drawing 4] It is the important section rear-face Fig. of the platen of drawing 1 .

[Drawing 5] It is the important section perspective view of the rear face of the platen of drawing 1 .

[Drawing 6] It is the plane mimetic diagram showing the ink TWY established in this invention platen.

[Drawing 7] It is a sectional view in X-X-ray of drawing 6 .

[Drawing 8] It is the important section perspective view of drawing 6 .

[Drawing 9] It is the drawing in which the condition on the rear face of a platen of the ink TWY of drawing 6 is shown.

[Drawing 10] It is the plane mimetic diagram showing another mode of the ink TWY established in this invention platen.

[Drawing 11] It is the important section sectional view of drawing 10 .

[Drawing 12] It is the important section perspective view of drawing 10 .

[Drawing 13] It is the plane mimetic diagram showing still more nearly another mode of the ink TWY established in this invention platen.

[Drawing 14] It is a sectional view in the Y-Y line of drawing 13 .

[Drawing 15] It is the sectional view showing the condition of the cross section in the Z-Z line of drawing 13 .

[Drawing 16] It is the perspective view showing the condition from the platen rear face of the ink TWY of drawing 13 .

[Drawing 17] It is the important section sectional view showing another mode of the ink TWY established in the platen concerning this invention.

[Drawing 18] It is the important section perspective view on the platen background seen from [ of drawing 17 ] arrow-head A.

### [Description of Notations]

1 Platen

2 1st Rib

3 2nd Rib

4 Crevice

5 Pars Insularis



6 Through Tube  
7 Slot (Induction Slot)  
8 Height  
9 V Groove  
10 Slot (Concentration Slot)  
11 Wall  
12 Inclination Side  
21 Recording Head Section  
22 Nozzle Array  
31 32 Paper feed roller  
33 34 Delivery roller  
41 Tube-like Object